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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/530,533	04/06/2005	Kazuyoshi Irioka	10873.1602USWO	4798

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EXAMINER

LARYEA, LAWRENCE N

ART UNIT	PAPER NUMBER
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3768

MAIL DATE	DELIVERY MODE
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10/05/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/530,533

Applicant(s)

IRIOKA ET AL.

Examiner

Lawrence N. Laryea

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 April 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|----------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/06/05 05/08/06</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Examiner acknowledges Applicant's amendment and remarks filed May 11, 2007.

Claims 1-6 and 7 are now pending. The Examiner acknowledges the amendments to Specification, Claims 1 and 2.

Applicant's arguments with respect to the rejection(s) of claim(s) 1-6 and 7 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn.

However, upon further consideration, a new ground(s) of rejection is made.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re Claim 1, lines 7-11 recite the limitation "positive and negative region." This limitation is electronically vague.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1 and 2 are rejected under 35 U.S.C. 102(b) as being anticipated by **Herres (Patent 5070879)**

5. Re Claims: **Herres (Patent 5070879)** teaches an ultrasonic probe comprising: an ultrasonic element unit for transmitting and receiving ultrasonic waves; an oscillation mechanism for causing oscillation to the ultrasonic element unit **(18)**; and a detector **(position sensor 20)** for detecting an oscillation of the ultrasonic element unit, wherein the detector detects the oscillation angle and the oscillation origin of the ultrasonic element unit, and in a state where an oscillation range of the ultrasonic element unit is divided at the oscillation origin into two regions(origin-return) of a positive region and a negative region (origin-return), the detector outputs an origin-return signal that shows different logic levels depending on whether the ultrasonic element unit is located in the positive region and a negative region (origin-return), and a control of origin return for the ultrasonic element unit to its oscillation origin is performed on the basis of the origin-return signal. (See Col.2, lines 37-67,Col.4, lines 15-54 and Fig.5)

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3-4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Herres** in view of **Miyagawa (Patent 5759155)**.

7. Claims 3-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Herres** and further in view of **Miyagawa (Patent 5759155)**.

8. **Herres** fails to disclose an ultrasound apparatus wherein a slit plate formed in an arc-shape, light source, plurality of photodetectors are used in the medical diagnostic procedure.

9. **Miyagawa** disclose an ultrasonic probe comprising a detector where a slit plate oscillates (**See Figures 2 and 7**) together with the ultrasonic element unit and has a first slits (**75a**) and second slits(**75b**) where a light source(**74a**) for radiating light to the slit plate; and a first photodetectors (**40**) and second photodetectors (**85a**) which detect the light emitted from the light source and passed through the slits and converts the detected light into an electric signal and outputs an origin-return signal (**See Col. 10, line 25-40, Col. 10, line 58-67, Col. 11, line 1-7 and Col. 10, line 48-55**) and the slit plate oscillates together with the ultrasonic element unit and has plural second slits aligned at a predetermined pitch concentrically or in an arc-shape about the oscillation axis; a light source for radiating light to the slit plate; and a second photodetector which detects the light emitted from the light source and passed through the second slits, converts the detected light into an electric signal and outputs an angle signal (**See Col. 13, line 41-65, Col. 14, line 42-66, Col. 15, line 1-40 and Figures 2-4(b) and 16-19**).

Therefore, it would have been obvious to one having ordinary skill in the art at the time invention was made to modify the ultrasonic probe of **Herres** to incorporate the similar teachings of **Miyagawa** in order to repeat scanning, reverse the ultrasonic element unit to the reference point (stationary reference) for diagnostic evaluations and

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avoid undesired movements, and also wherein the detector comprises a plurality of slits, a light source and a plurality of photodetectors which are configured to convert the electrical signal to an angle signal in order to have a highly reliable rotation information for medical diagnostic procedure.

10. Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Herres** in view of **Miyagawa** and further view of **Imade et al (Patent 4880011)**.

11. **Herres and Miyagawa** disclose the invention as claimed, see rejection supra; however the combination of **Herres and Miyagawa** does not explicitly teach an ultrasonic probe wherein the detector comprises a magnetic dram which oscillates together with the ultrasonic element unit and has plural magnetic patterns.

12. **Imade et al (Patent 4880011)** disclose an ultrasonic probe wherein the detector comprises a magnetic dram (26) which oscillates together with the ultrasonic element unit (27) and has plural magnetic patterns aligned at a predetermined pitch concentrically or in an arc-shape about the oscillation axis; and a magnetoresistive element which detects a magnetic pattern of the magnetic dram converts into an electric signal and outputs an angle signal and the magnetic dram is provided on the oscillation axis which is fixed directly to the ultrasonic element unit (**Col. 6, line 13-30, Col. 3, line 39-56, Col. 2, line 45-60 and Figures 2-8**).

Therefore it would have been obvious to one having ordinary skill in the art at the time invention was made to modify the ultrasonic probe of **Herres** as modified with **Miyagawa** to incorporate the similar teachings of **Imade et al** wherein a magnetic dram which oscillates together with the ultrasonic element unit wherein a magnetoresistive

element detects a magnetic patterns of the magnetic dram and then converts it into an electric signal and outputs an angle signal in order to have a highly reliable and accurate rotation information for medical diagnostic procedure (**See Abstract**) as taught by **Imade et al**

13. Also, **Imade et al** teaches an ultrasonic probe comprising: an ultrasonic element unit for transmitting and receiving ultrasonic waves; an oscillation mechanism for causing oscillation to the ultrasonic element unit and a detector for detecting oscillation of the ultrasonic element unit wherein the detector detects the oscillation angle and the oscillation origin of the ultrasonic element unit and when the oscillation range of the ultrasonic element unit is divided at the oscillation origin into two regions of a positive region and a negative region (**Col. 3, line 39-49 and Figures 1-8 of Imade et al**).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Motz et al (6664900) teach a transducer device that detects positive and negative directions

Miyagawa (Patent 5088495) discloses a magnetoresistive element with an arc type magnetic element to sense angular rotation.

Matzuk (Patent 4399703) discloses an ultrasonic probe wherein an oscillating scanner reverse to a reference point such as for a stationary reference.

Green (Patent 4141347) discloses an ultrasonic probe wherein two sensors of optical type are configured to be used for detect (track) reference and angle signals.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

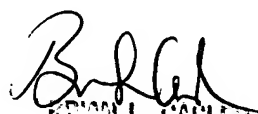
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence N. Laryea whose telephone number is 571-272-9060. The examiner can normally be reached on 9:30 a.m.-5:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on 571-272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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